

## CHAPTER 9

# EXPLOSIVES SAFETY

This chapter will acquaint you with basic explosives safety precautions. All activities involved with ordnance have experts trained in the areas of ordnance usage, stowage, handling, disposal, and transportation. As a safety supervisor, you must know about ordnance safety. It will be up to you to reduce hazards and to help prevent mishaps. In this chapter we briefly discuss the following topics:

- Purpose and elements of the Naval Explosives Safety Program
- Organization and general responsibilities of the Naval Explosives Safety Program
- The safety supervisor's ordnance safety requirements and responsibilities
- General safety precautions for freight/weapons elevators and ammunition hoists
- Personal protective equipment
- Protective clothing worn during ordnance handling
- Prohibited articles in hazardous areas
- Ordnance hazards associated with fire and heat
- Qualification/certification criteria and procedures
- Definitions and terms associated with explosives mishap reports
- Reportable mishaps or deficiencies
- Investigation and reporting responsibilities

### THE NAVAL EXPLOSIVES SAFETY PROGRAM

Preventing the premature, unintentional, or unauthorized discharge of explosives and devices containing explosives is what explosives safety is all about. It involves a decrease in the effects of explosions, combustion, and toxicity. It includes all mechanical, chemical, biological, and electrical hazards associated with explosives and hazards of electromagnetic radiation to explosive ordnance. In addition, explosives

safety includes equipment or systems in which malfunction would hazard the safe handling, maintenance, storage, transfer, release, delivery, or firing of explosives.

The Weapons Systems Explosives Safety Review Board (WSESRB) reviews the explosives safety of weapons or explosives systems. It makes safety recommendations to the proper naval systems commander or project manager responsible for the system or material under review. This board, headed by a representative of the Commander, Naval Sea Systems Command (COMNAVSEASYS COM), consists of representatives from appropriate systems commands and other commands as necessary.

The Department of Defense Explosives Safety Board (DDESB) sets up explosives safety standards for Department of Defense (DOD) personnel. It advises the Secretary of Defense and each DOD component on hazardous conditions associated with the handling, transportation, and storage of explosives and ammunition. This board consists of one colonel or captain (O-6, or senior) from each military department. An officer or a person of equivalent seniority chairs the board. That position rotates among the departments. Liaison officers and a permanent secretariat of senior civilian explosives safety engineers from each of the military departments provide technical support to the board.

### PURPOSE AND ELEMENTS OF THE NAVAL EXPLOSIVES SAFETY PROGRAM

The purpose of the Naval Explosives Safety Program is to ensure safety and enhance operational readiness. The program uses several elements to reduce, to a minimum, the chance of injury, loss of life, and property damage.

#### Explosives Safety Standards

Explosives safety standards are an essential element of the Naval Explosives Safety Program. The DDESB sets explosives safety standards and periodically coordinates their revision. These standards guide DOD components in avoiding the hazardous conditions connected with explosives. Appropriate Naval Sea

Systems Command (NAVSEASYS COM) publications publish the standards for naval use and observance.

### **Explosives Safety Studies**

Explosives safety studies, surveys, and reviews are conducted as part of the Naval Explosives Safety Improvement Program (NESIP). The Chief of Naval Operations (CNO) established this element of the safety program. The WSESRB conducts some of the reviews, while the Navy Ammunition and Hazardous (AMHAZ) Materials-Handling Review Boards conduct others. The Naval Sea Support Center detachments conduct detailed inspections.

### **Explosives Safety Training**

Training is another key element of the Naval Explosives Safety Program. You must make sure your personnel follow safe operating practices and procedures. To do that, they must maintain a clear and practical understanding of mishap prevention. Make sure the personnel involved in handling or transporting explosives know how to perform their work safely and quickly. Experienced commissioned officers or petty officers train shipboard personnel until they are competent to perform their work under less direct supervision. We address training in more depth later in this chapter.

### **Explosives Safety Inspections**

One element required of all levels of command is the establishment and continuation of a positive explosives safety inspection program. This program, too, must be present at all levels of command.

### **Explosives Mishap Investigations and Reporting Procedures**

The final element of the Naval Explosives Safety program is the use of explosives mishap investigation and reporting procedures. The gathering of information concerning mishaps, incidents, and material safety is basic to any safety program. Such information helps you to develop organized steps needed to prevent further mishaps. We discuss investigation and reporting procedures later in this chapter.

## **ORGANIZATION AND GENERAL RESPONSIBILITIES OF THE NAVAL EXPLOSIVES SAFETY PROGRAM**

The Naval Explosives Safety Program is an important part of the primary program areas (shore, surface, aviation, and submarine and diving). It extends into several support areas of the Naval Occupational Safety and Health (NAVOSH) Program. It applies to all personnel, civilian and military, in any Department of the Navy duty assignment in which explosives are, or may be, present.

The CNO exercises general supervision and command authority for the application of technical guidance. Within the Office of the CNO, the Deputy Chief of Naval Operations (DCNO) (Logistics, N4) supervises U.S. Navy explosives safety matters. The DCNO exercises the authority of the Secretary of the Navy for waiver of explosives safety requirements. The DCNO coordinates with the Commandant of the Marine Corps the explosives safety policies, programs, and guidance that mutually affect Navy and Marine forces.

NAVSEASYS COM sets up and issues technical standards and criteria and provides technical help to the Department of the Navy. NAVSEASYS COM also furnishes technical advice and evaluations to the CNO when operational requirements conflict with technical requirements. NAVSEASYS COM directs and coordinates all technical offices concerning explosives safety and prepares data as needed to analyze program effectiveness. This command also provides the necessary technical advice and guidance for development of training programs. These programs set up a level of competence within the Department of the Navy that ensures the success of the Naval Explosives Safety Program.

The following is a list of commanders who have assigned responsibilities under the supervision of the CNO (N4):

- Commander, Naval Air Systems Command
- Commander, Naval Electronic Systems Command
- Commander, Naval Supply Systems Command
- Commander, Naval Facilities Engineering Command

The Commander, Naval Safety Center (COMNAV-SAFECEN), provides support to the CNO (N4) in the

supervision and management of the Naval Explosives Safety Program.

All commands having custody of explosive materials must make sure only qualified personnel handle those materials. Commands must submit reports of explosives mishaps. We discuss both the certification program and explosives mishap reporting later in the chapter.

## ORDNANCE MISHAP PREVENTION

Improper processing, handling, loading, and testing of explosive devices have, in the past, caused mishaps. These mishaps resulted in injury, loss of life, or damage to property. They also reduced the working effectiveness of both fleet and shore activities.

Personnel error is the major cause of mishaps with explosive devices. Analysis of mishaps caused by personnel error shows that the most common reasons for their occurrence are as follows:

- Lack of training
- Improper procedures
- Improper handling
- Lack of proper supervision
- Inattention
- Complacency

## THE SAFETY SUPERVISOR'S ORDNANCE SAFETY REQUIREMENTS AND RESPONSIBILITIES

As an ordnance safety supervisor, you must be familiar with current directives in ordnance safety, such as *Ammunition and Explosives Ashore*, NAVSEA OP 5, and *Ammunition Afloat*, NAVSEA OP 4. You also should know the type and classification of ordnance within your command or activity. In addition, you should know the specific hazards the various types of ordnance pose. Personnel supervising the use, care, inspection, handling, preparation, or routine disposal (excluding explosive ordnance disposal operations) of ammunition and explosives must adhere to the following guidelines:

1. Be qualified and certified as required by OPNAVINST 8023.2C and supplemental regulations.

2. Make sure personnel obey all regulations and instructions; remain vigilant throughout the operation; and strictly prohibit horseplay.
3. Carefully instruct and frequently warn personnel under them of the need for care and constant vigilance.
4. Brief working parties on related safety instructions before they begin an operation. Know the hazards of fire, explosion, and other catastrophes that the safety regulations should prevent.
5. Be alert to detect any hazardous procedures or practices. Know the symptoms of a deteriorating mental attitude of certified personnel, and take immediate corrective action upon detecting such symptoms.
6. Make sure subordinates are qualified and certified to perform the job assigned to them. Make sure their certification is current. Report those personnel who are not qualified for their assigned work to their immediate superior.
7. Enforce orders about the maximum number of personnel permitted in the hazard area.
8. Permit the use of only authorized tools and handling equipment for the operations. Make sure personnel use them in the manner specified by standard operating procedures.
9. Keep the area clean; prevent the blocking of safety exits, aisles, and accesses to fire-fighting equipment.
10. Enforce compliance with safety regulations that concern protective clothing and equipment. That includes inspecting; maintaining; or replacing, if necessary, goggles, gloves, respirators, aprons, and other personal protective equipment. Instruct personnel on the purpose and use of protective equipment before they engage in an operation requiring its use.
11. Before leaving at the end of a work day, make sure all conditions in the work area are safe.
12. Inform the immediate supervisor of any area needing lights, guards, safety appliances, or repairs.
13. Report in writing to the commanding officer any requests, suggestions, or comments about safety standards.

14. Assign personnel to guide ordnance through scuttles or hatches. Install 1-inch pads on edges of openings.
15. Refrain from competing with other ordnance-handling parties. Prohibit any other cargo-handling operations during ordnance-handling operations.
16. Post warning signs during ordnance-handling operations, and hoist the "BRAVO" flag.
17. Keep ordnance-handling parties small.
18. Alert your immediate supervisor of the need for explosive ordnance disposal (EOD) personnel to remove defective or suspected ammunition from the work area.

As a supervisor, you have no authority to waive or alter NAVSEASYSOCOM and other commands' safety regulations. You cannot permit anyone to deviate from or violate these regulations.

### Ordnance Handling Training of Subordinates

You now know what your duties as a supervisor are. What are the duties of those personnel you train and supervise? Operating personnel must read, understand, and strictly follow all safety standards, requirements, and precautions that apply to their work or duty.

Personnel working with hazardous munitions must know that such substances are designed to explode and are **always** dangerous. Make sure they are trained to instantly respond to, or initiate, any warning signal. The signal can be oral, visual, audible, or any combination of these. Conduct training on a regular basis to ensure all personnel are aware of the meaning and intent of all warning signs, safety precautions, and instructions.

In addition, train your subordinates to take the following actions:

1. Immediately report to their supervisor any condition, actions, or equipment or material they consider unsafe
2. Immediately **warn** other **personnel** when they are in **danger** because of known hazards or by their failure to obey safety precautions
3. Wear or use approved protective clothing or equipment, as required
4. Immediately report to their supervisor any injury or evidence of impaired health to themselves or others occurring during work or duty

5. Warn others if an unforeseen hazard occurs by giving an audible warning; exercise reasonable caution in such appropriate situations
6. Immediately report to their supervisor the presence of unauthorized personnel in the area
7. Thoroughly wash hands after handling ordnance
8. Refrain from moving cracked, dented, deformed, corroded, or otherwise damaged ordnance
9. Avoid handling ordnance that is "armed" or on which the safety device is off, unless directed otherwise

### General Ordnance Precautions

The greatest danger from ordnance is explosion. Because of built-in safety devices, ordnance requires outside intervention to set it off unintentionally. Fire, excessive heat, improper handling, or simple misjudgment or mistakes can cause a weapon to detonate. The major safety factor in preventing an ordnance catastrophe is having a well-experienced and knowledgeable person in charge. He or she must identify and correct potential safety hazards. A crew who knows and understands the basics of ordnance safety and has a real respect for ordnance hazards helps its supervisor. The following is a list of general ordnance precautions that you and your subordinates must follow:

1. Do not smoke or allow open flames near ordnance.
2. Stop operations immediately if ordnance leaks any material. Notify supervisors who will take corrective action.
3. Use ordnance only for its designed purpose.
4. Make sure fire-fighting equipment is available near ordnance operations.
5. Do not eat or drink near ordnance.
6. Know and understand decontamination methods if handling chemical ordnance.
7. Get immediate first aid if fuels or oxidizers splash on you.
8. Never enter a space where you suspect liquid fuel leaks without having a gas free survey conducted.
9. Report all mishaps immediately.

10. Do not try to alter or change ordnance in any way.
11. Use only authorized equipment to perform any operation on ordnance.
12. Electrically ground weapons during assembly, disassembly, and check-out.
13. Use approved standard operating procedures (SOPs) for all hazardous operations.
14. Suspend operations involving ordnance during thunderstorms or high winds as directed by local regulations.

## **GENERAL SAFETY PRECAUTIONS FOR FREIGHT/WEAPONS ELEVATORS AND AMMUNITION HOISTS**

When working around freight/weapons elevators and ammunition hoists, observe the following safety precautions:

- Always emphasize safety as well as following safety procedures when using freight/weapons elevators and ammunition hoists. Allow only trained personnel to operate this equipment. Ensure they know how to operate emergency devices.
- Inspect the elevators and hoists at least once each week or after use. Look for loosened or damaged parts. Tag the equipment **OUT OF SERVICE** before beginning repairs, adjustments, or inspections. Until repairs are complete, make sure elevator doors remain locked or barricades remain erected if they must remain open.
- Place a placard or card in each elevator showing its safe working load. You must never exceed the safe working load.
- Authorize personnel to use only those elevators specified for passenger use. Elevators not authorized for passenger use must carry a **KEEP OFF THIS ELEVATOR WHEN NOT IN OPERATION** sign.
- Close and secure all elevator doors or gates before starting the elevator and when in use.
- Keep hands away from motor-operated doors if you are the operator. When you can manually operate doors or gates, grasp only the handles provided. Operators must never leave the elevator-operating mechanism unprotected.

- Remove the load from an elevator or hoist that does not start. If the elevator or hoist still fails to work, call maintenance personnel for help. Do not jump off the elevator if it refuses to stop. Safety devices and automatic terminal stops should take care of an emergency.
- Perform maintenance and testing of elevators according to *Naval Ships' Technical Manual (NSTM)*, chapter 700.
- Use more than one person to move the elevator when performing maintenance.
- Use only elevators and hoists designated for ammunition.
- Secure covers on ammunition hoists when not in use.
- Make sure personnel do not ride in or on top of ammunition hoists to perform maintenance of any type.
- Load heavy loads in the center of the platform. Make sure the operator exercises extreme care in handling such loads. While unloading or offloading heavy loads, make sure the operator checks to see that locking devices and safe hoisting attachments are in place.

## **PERSONAL PROTECTIVE EQUIPMENT**

Personnel who handle ordnance must wear proper personal protective equipment (PPE). This equipment consists of garments and devices needed to protect people from hazards inherent to the performance of specific jobs. Do not mistake PPE with safe work attire, such as short sleeves, cuffless trousers, or safety shoes. PPE does nothing to reduce or eliminate a hazard, and its failure means immediate exposure to the hazard. PPE may become ineffective or misused without the wearer knowing so, which is particularly serious.

You must provide personal protective clothing and equipment and make sure personnel use them in the following situations:

- When enclosing or isolating a process, or when equipment is impractical
- When making process-material substitutions
- When providing ventilation
- When using other control measures

- When short exposures to hazardous airborne concentrations may occur
- When certain or accidental spills may occur

Always make sure personnel observe the following safety precautions:

- Wear ear protection when handling ordnance during firing exercises
- Wear nonskid, steel-toed safety shoes when working with ordnance
- Clean their protective clothing after each use to remove all traces of contamination before stowing it
- Inspect clothing for damage, deterioration, or other defects before using it
- Reject any items that are not completely satisfactory

When working with ordnance containing white phosphorus, make sure enough emergency equipment is available for personnel to use.

## PROHIBITED ARTICLES IN HAZARDOUS AREAS

Personnel working with explosives or in areas where explosives are present must not wear certain clothing articles. They also must not wear or carry certain prohibited articles. Some of the prohibited articles are listed in the following paragraphs.

### Articles of Adornment

Personnel may not wear articles of adornment, such as watches, rings, necklaces, chains, bracelets, earrings, neckties, and scarves, in the following situations:

- When working with exposed explosives or in areas where exposed explosives are present
- When operating moving or rotating equipment
- When physically handling material, such as that involved in lifting or moving
- When working with equipment that could cause electric shock
- When handling weapons with electric leads

There are several exceptions to the above list. Personnel may wear articles of religious adornment if the local safety office approves. Operators of

materials-handling equipment engaged in receipt, storage, and issue of material may be exempted at the discretion of the local safety office. Another exemption, if approved by the local safety office, concerns personnel operating or testing electrical equipment that is properly grounded.

### Tools

Personnel must use authorized tools when working on explosives or in an explosives area. You, as supervisor, should make periodic inspections to ensure compliance.

### Firearms

Do not permit anyone carrying a firearm to enter any explosives area or building. The exceptions are couriers, assigned security personnel, or personnel responding to an emergency.

### Matches and Lighters

Unless the commanding officer gives written authorization, do not permit matches, cigarette lighters, and other spark-producing devices in explosives areas.

### Food

Personnel must not bring food to any area or eat, drink, or store food in any area in which the handling or storing of explosives or chemical agents occurs.

## ORDNANCE HAZARDS ASSOCIATED WITH FIRE AND HEAT

Fire is a hazard to life and property, especially when ammunition and explosives are involved. Many of these materials are extremely sensitive to heat. They react at temperatures much lower than those required to ignite ordinary wood, paper, or fabrics. Even indirect heat generated by a fire could start a reaction that could result in an explosion. The **first and most important rule** in operations involving ammunition and explosives is to **keep them away from excessive heat!**

All personnel concerned with ammunition and explosives must investigate the cause of fires. They must also recognize and follow good practices to prevent fires. Personnel concerned with ammunition must thoroughly understand procedures for fighting and controlling fires involving explosive materials. Having a well-trained and efficient organization responsible for fire safety is especially important. Personnel concerned

with ammunition must have a full awareness of their responsibility.

Immediately report all fires starting near ammunition or explosives. Begin fighting the fire with all available means and without awaiting specific instructions. If the fire involves explosive material or if it is supplying heat to explosives, evacuate personnel in the area and seek safety. Also evacuate personnel if a fire is so large that you cannot extinguish it with the equipment available.

Personnel engaged in fighting fires involving explosives and ammunition should seek available cover. Do not expose yourself unnecessarily to intense heat, flying fragments, or possible explosions.

### **Fire Hazard and Fire-Fighting Indoctrination**

Make sure all personnel, supervisory or otherwise, receive indoctrination about, and become thoroughly familiar with, fire hazards and fire-fighting equipment. They must be familiar with the safety practices of the operations for which they are responsible. They must be familiar with the fire bill provisions, both general and local, that apply to their operation. They must know the actions to take if a fire emergency develops.

### **Fire Watch Responsibilities**

You must make sure that a qualified fire watch, adequately prepared and equipped, is standing by during the following evolutions:

- Maintenance and repair work involving open flames or heat-producing devices near or within an area where personnel store, process, or handle explosives
- Disposal operations

### **Fire Hazard Inspections**

Fire hazard inspections conducted periodically are an important part of fire prevention. You should regularly inspect, preferably monthly, all areas and buildings of an ammunition activity. Common causes of fire and fire violations include, but are not limited to the following:

- Excessive amounts of combustible, explosive, or otherwise dangerous materials
- Hazardous conditions arising from defective or improperly installed equipment and machinery

used for processing or handling ammunition or explosives

- Dangerous accumulations of rubbish, waste paper, boxes, and shavings
- Improper storage of materials
- Obstructions interfering with the use of fire exits, fire doors, or fire-fighting equipment
- Insufficient, inoperative, or poorly maintained fire-fighting equipment
- Uncontrolled vegetation growing around buildings and magazines
- Evidence of violations of smoking regulations or the use or possession of matches, cigarette lighters, or other prohibited articles
- Missing or improperly posted fire bills
- Unauthorized use of heat- or flame-producing devices or equipment in restricted areas

### **Smoking Regulations**

Personnel must not smoke in areas containing ammunition, explosives, or any other hazardous materials. You should conspicuously display NO SMOKING signs where smoking is prohibited. The commanding officer may appoint certain smoking areas within restricted areas.

### **Housekeeping**

An essential element of any fire prevention effort is good housekeeping. Accumulations of explosive dust, combustible scrap, and flammable residue are primary sources of destructive fires. Keep areas clean and orderly to reduce fire hazards. Do not allow rubbish and trash to gather. Stack combustible material in an orderly manner to prevent toppling or collapsing of stacks.

## **EXPLOSIVES HANDLING PERSONNEL QUALIFICATION AND CERTIFICATION PROGRAM**

The intent of the Explosives Handling Personnel Qualification and Certification Program is to make sure you qualify and certify personnel before they perform any task involving explosive devices. This program concerns everyone involved in the handling, preparation, inspection, or adjustment of live ammunition.

You should permit only reliable, mentally sound, and physically fit persons to work with or use explosives and ammunition. Make sure their qualification and certification are current.

## QUALIFICATION PROCEDURES

Personnel qualify at various levels, such as team member, quality assurance, and safety observer. We discuss the different qualification levels in later paragraphs.

Explosive devices are segregated into representative “family types.” That prevents the need for personnel to qualify on every type of ordnance or ammunition. Personnel qualify by demonstrating their skills before a certified member of the certification board. They show each evolution they will perform (for example, assembly and testing) on the specific explosive device, represented by a family type of device, if appropriate. The person qualifying must know the documentation, such as a technical manual, that applies to each device and how to use it.

## QUALIFICATION LEVELS

As with any qualification process in the Navy, there are different levels and minimum standards for certification. The qualification levels and corresponding basic qualification standards are as follows:

**1. Team Member (TM):** Members must have an awareness of basic safety precautions about the work task and explosive devices concerned. They must have received formal or on-the-job training and must have been recommended by their immediate supervisor. **NOTE:** TM qualified personnel will perform in team concept only under supervision of a Team Leader.

**2. Individual/Team Leader (I/TL):** Team Leaders must have the same basic qualifications as a TM. They must have sufficient knowledge and must have demonstrated the skill required to be entrusted with performing the work task alone or to direct the performance of others in safe and reliable operations. They must be capable of interpreting the requirements of applicable checklists and assembly/operating manuals.

**3. Quality Assurance (QA):** QA personnel must have the same basic qualifications as an I/TL. They must have a detailed knowledge of applicable inspection criteria for the explosive/device system. They must be able to determine whether an explosive device/system is functioning properly while in use. They must be able

to determine whether the individual followed necessary assembly or installation procedures according to applicable directives.

**4. Instructor (IN):** Instructors must have the same basic qualification as an I/TE. They must have the required skills to instruct others and provide formal training using an approved course of instruction.

**5. Safety Observer (SO):** Safety observers must know enough about safety procedures and the functioning of safety devices to decide on actions needed to counter improperly used procedures or safety devices. **NOTE:** This level of qualification does not build on any other level of qualification.

## CERTIFICATION PROCEDURE

The commanding officer or officer in charge (OIC) of each unit or naval activity involved with explosives appoints a certification board. This board includes, as a minimum, the responsible department head (or comparable supervisory representative if not a department). The board also includes at least one person, E-6 or above, certified to perform the task, function, or evolution. In large units, such as aircraft carriers or weapons stations/ammunition depots, the department head may delegate the responsibility for certification. Additional personnel from within or outside the command may increase the board as appointed by the commanding officer or OIC.

Once qualified and recommended, personnel receive their final certification. The commanding officer, OIC, or the appointed head of the certification board issues the final certification. You must make sure this information gets entered into your people’s training or personnel record. In addition, you must keep a certification sheet (fig. 9-1) in the operating area for each person performing operations covered by an operating procedure. Activities may vary the certification sheet formats to satisfy specific requirements.

### Duration of Certification

Certification, unless revoked, is valid for a maximum of 12 months. The certification board confirms a renewal of the certification, whether issued at the time of expiration or later. The certification covers an individual or a team qualification. If possible, you should completely requalify personnel before renewing their certification.



CERTIFICATION FORMAT					
CERTIFICATION LEVELS			WORK TASK CODES		
TM – TEAM MEMBER	1. STOWAGE/STORAGE	5. ARM/DEARM			
I – INDIVIDUAL	2. HANDLING	6. TRANSPORTING			
TL – TEAM LEADER	3. ASSEMBLY/DISASSEMBLY	7. MAGAZINE INSPECTION			
QA – QUALITY ASSURANCE	4. LOAD/DOWNLOAD	8. INSTALL/REMOVE			
SO – SAFETY OBSERVER					
IN – INSTRUCTOR					
EXPLOSIVE DEVICE	CERT LEVEL/ WORK TASK	INDIVIDUAL SIGNATURE	CERT BOARD OBSERVER	BOARD CHAIRMAN	VALIDATION DATE
CERTIFICATIONS ABOVE HAVE BEEN REVIEWED AND RECERTIFIED AS PER DATES AND SIGNATURES INDICATED BELOW, EFFECTIVE FOR 12 MONTHS. NOTE: ITEMS NOT REQUIRED FOR RECERTIFICATION SHALL BE LINED OUT, INITIALED AND DATED BY THE BOARD CHAIRMAN.					
<u>INDIVIDUAL BEING RECERTIFIED</u>			<u>BOARD CHAIRMAN</u>		
<u>SIGNATURE</u>	<u>DATE</u>	<u>SIGNATURE</u>	<u>DATE</u>		
<u>SIGNATURE</u>	<u>DATE</u>	<u>SIGNATURE</u>	<u>DATE</u>		
<u>SIGNATURE</u>	<u>DATE</u>	<u>SIGNATURE</u>	<u>DATE</u>		
<u>NAME:</u>		<u>RANK/RATE</u>			
<u>SQUADRON/STATION/SHIP</u>					

Figure 9-1.-Certification sheet.

### Revoking Certification

Commanding officers and officers in charge are responsible for revoking individual or team certification whenever they believe it is in the interest of safety. Relocating certification for individuals and teams, including the team leader, is mandatory if an explosives

mishap occurs because they fail to follow authorized procedures. Relocating certification is also mandatory when personnel behave as follow:

- Flagrantly disregard safety precautions
- Recklessly operate equipment used to handle explosive devices

- Show incompetence or unreliability by any other behavior

You should recognize that ordnance incidents and mishaps can and do happen through accidental acts, carelessness, and minor rule infractions. They also happen through deliberate acts, negligence, and major rule infractions. With the commanding officer's approval, personnel with a revoked certification must be retrained until you consider them requalified and recertified. However, their behavior may show that retraining may not be effective. You should then assign them to other tasks not involving explosive devices. Revoking the certification of military personnel requires an entry in the proper portion of their individual service record. The entry must state the specific reason for the revocation.

For information on qualification and certification procedures, you should consult type commander directives, enclosure 5 of OPNAVINST 8023.2C, and NAVSEAINST 8020.9A for naval shore activities.

### **EXPLOSIVES MISHAP OR CONVENTIONAL ORDNANCE DEFICIENCY REPORTING PROCEDURES**

A significant potential for damage or injury exists in mishaps involving explosives. Therefore, the requirements for reporting explosives mishaps are more extensive than those for reporting other types of mishaps. To report those mishaps properly, you first need to understand the meaning of the following terms:

- Explosives Mishap. An incident or accident involving conventional ordnance, ammunition, explosives, or explosive systems and devices resulting in an unintentional detonation, firing, deflagration, burning, launching of ordnance material (including all ordnance impacting off range), leaking or spilling of propellant fuels and oxidizers, or release of a chemical agent. Even if an ordnance system works as designed, if human error contributed to an incident or accident resulting in damage, death, or injury, the event is an explosives mishap.

- Explosive Material. A chemical, or a mixture of chemicals, that undergoes a rapid chemical change (with or without an outside supply of oxygen) freeing large quantities of energy in the form of blast, light, and hot gases. Incendiary materials and certain fuels and oxidizers that can be made to undergo a similar chemical change are also considered explosive materials.

- Conventional Ordnance Deficiency. A malfunction, observed defect, or induced defect involving conventional ordnance, explosives, ammunition, explosive systems, devices, or support and handling equipment used to handle, load, store, or transport ordnance.

- Chemical Agent. A chemical compound intended for use in military operations to kill, seriously injure, or incapacitate people through its chemical properties. Excluded are riot control agents, chemical herbicides, smoke and flames, pesticides, and industrial chemicals unrelated to chemical warfare.

### **REPORTABLE MISHAPS AND DEFICIENCIES**

When you report explosives mishaps and conventional ordnance deficiencies, use the format described in chapter 5 of OPNAVINST 5102.1C, *Mishap Investigation and Reporting*; enclosure (7) of OPNAVINST 5100.21 B, *Afloat Safety Program*; and chapter 10 of OPNAVINST 8600.2A, *Naval Airborne Weapons Maintenance Program (NAWMP)*. Reportable mishaps and deficiencies include incidents and malfunctions involving non-nuclear explosives, explosive ordnance, chemical agents, and explosive systems.

#### **Explosives Mishaps**

The following describes events you should report as explosives mishaps. When reporting these events, use the format described in the applicable instruction listed in the preceding paragraph:

- Detonation, Deflagration, Burning, or Firing. An unintentional initiation, or explosion, or reaction of an explosive material, component, or system. Accidental discharge of all guns, including small arms.
- Inadvertent Launch. An unintentional launching of a weapon.
- Chemical Agent Release. Any intentional launching of a weapon resulting in the following:
  - Damage to property from contamination, or costs incurred for decontamination
  - Physiological symptoms of agent exposure exhibited by individuals

- A serious potential for exposure created by the quantity of the agent released into the atmosphere
- Propellant Fuels and Oxidizers. Leaking or spilled propellant fuels and oxidizers.
- All ordnance impacting off range.

### Conventional Ordnance Deficiencies

The following describes events you should report as conventional ordnance deficiencies. When preparing a report of these events, follow the guidelines of OPNAVINST 5102.1C, appendix B; use the words *Conventional Ordnance Deficiency Report* for the subject line. If the report will include a request for an engineering investigation, use the words *Conventional Ordnance Deficiency Report/Engineering Investigation Request* for the subject line.

- Malfunctions. The failure of an explosive component, weapon, or weapons system to function as designed; for example, failure to launch and dud weapons.
- Improper Handling. Ordnance handling incidents attributed to human error. Examples include misuse of equipment, failure to follow established procedures, and violation of safety precautions, resulting in dropped or damaged ordnance. Other examples include human errors during processing, assembling, testing, loading, storing and transporting ordnance.
- Inadvertent Arming. The unintentional arming of an explosive component or weapon.
- Defective Weapons Support Equipment. Deficiencies involving any equipment or device used in the manufacture, test, assembly, handling, and transportation (skids, trailers or similar equipment) of any explosive system.
- Observed Defect. A discovered defective weapon or weapons system. Examples include protruding primers, damaged components, cracked grains, and advanced corrosion.
- Other
  - An event that, except for chance, would have been an explosives mishap.
  - Any failure or malfunction of, or damage to, a launch device or associated hardware and software resulting in a hazardous condition

when handling or otherwise manipulating dummy, exercise, or explosive material.

- Unusual or unexpected occurrences, unnatural phenomena, unfavorable environments, or instances of equipment failure that may damage or affect the safety of an explosive material or system. That includes hazards of electromagnetic radiation to ordnance (HERO) sensitive explosive systems exposed to radiation hazard (RADHAZ) environments.
- The failure of a missile or explosive system to test, calibrate, or otherwise meet preloading or prelaunch requirements.
- Use of explosive ordnance disposal (EOD) services involving military explosives for other than routine disposal of explosives.

### EXCEPTIONS

Report the following events as explosives mishaps or conventional ordnance deficiencies; use the guidelines of the publication listed for each event:

- Explosives mishaps or conventional ordnance deficiencies occurring aboard a U.S. Navy, U.S. Naval Reserve, or Military Sealift Command vessel; follow OPNAVINST 5100.21 B.
- Mishaps or deficiencies occurring during airborne weapons systems and equipment operations, including armament supporting equipment (any equipment used in the loading or unloading of an explosive system or launch device on an aircraft); follow OPNAVINST 8600.2A, *Naval Airborne Weapons Maintenance Program (NOTAL)*.
- Nuclear weapons mishaps and incidents; follow OPNAVINST 3100.6E, *Special Incident Reporting (OPREP-3, Navy Blue and SITREP) Procedures* (NOTAL) and JCS Publication 1-03.7 (NOTAL).
- Explosives mishaps and conventional ordnance deficiencies that occur off station while an explosive material or system is in the custody of a common (commercial) carrier; follow NAVSEA OP 8020.13B and volume I of NAVSEA OP 2165.
- Explosives mishaps and conventional ordnance deficiencies involving transportation by

commercial carriers (including railroads) that occur on board a naval installation; follow OPNAVINST 5102.1C and volume 1 of NAVSEA OP 2165.

OPNAVINST 5102.1C exempts U.S. Marine Corps activities from reporting mishaps if Report Symbol DN 8025-02 is submitted as prescribed by Marine Corps Order 8025.1C (Class V Malfunctions and Deficiencies) (NOTAL).

## **POST-MISHAP AND DEFICIENCY ACTION**

The activity experiencing the mishap or deficiency will take the following action:

- Stop using the item, lot, or batch involved pending guidance from higher authority.
- Start the reporting procedures.
- Accurately and quickly respond to requests for additional information.

Depending on the severity of the explosives mishap or deficiency, other U.S. Navy commands and activities may help in identifying the actual cause. They would then take steps to ensure that similar mishaps or deficiencies do not occur; the following is an example of how those steps may be taken:

1. NAVSAFECEN together with other activities may conduct a mishap investigation.
2. Commander, Naval Sea Systems Command (NAVSEASYSKOM); Commander, Naval Air Systems Command (NAVAIRSYSKOM); or Commandant, U.S. Marine Corps, may designate all related explosive systems unserviceable, direct follow-up tests and evaluation of various lots to identify defective hardware, or initiate procedural changes in the use of the weapons system.
3. Commander, Ships Parts Control Center (SPCC), Mechanicsburg, Pennsylvania, may

support the above command decisions regarding disposition and use of defective or questionable parts by issuing a Notice of Ammunition Reclassification (NAR).

4. NAVSAFECEN would then enter all relevant information into a data repository.

## **INVESTIGATION AND REPORTING RESPONSIBILITIES**

The commanding officer, officer in charge (OIC), or ship's master requires the investigation and reporting of all reportable explosives mishaps occurring within the command. Included are those mishaps involving personnel attached to their command.

Unless you must include classified material, consider the reports as unclassified (FOR OFFICIAL USE ONLY). For further information on a message report, consult appendix B of OPNAVINST 5102.1C, and enclosure (7) of OPNAVINST 5100.21B, or OPNAVINST 8600.2A.

## **SUMMARY**

We discussed the Naval Explosives Safety Program and the Explosives-Handling Personnel Qualification and Certification Program in this chapter. We also discussed the duties of a safety supervisor in ordnance safety. We covered the precautions you should take when handling ordnance. We listed the safety precautions you should follow during maneuvers involving freight/weapons elevators and ammunition hoists. We examined the personal protective equipment you must use when handling ordnance. We listed the articles prohibited in hazardous areas as well as the fire prevention, protection, and control techniques each supervisor should know. Finally, we discussed the procedures you should use to report an explosives mishap.